AMENDMENTS TO THE CLAIMS

The following is a complete listing of all claims that are, or ever were, in the present application:

Claim 1 (original): A method for making a silicon carbide composite material, comprising:

bringing at least two preforms into contact with one another at a location relative to one another at which said preforms are to be joined, each of said preforms being permeable to molten silicon or silicon alloy, and each containing at least some carbon;

placing at said location a carbon-containing adhesive, thereby joining one preform to the other;

curing said adhesive, thereby forming a bonded assembly of preforms;

providing an infiltrant material comprising silicon;

heating said infiltrant material to a temperature above the liquidus temperature of said infiltrant material to form a molten infiltrant material;

communicating said molten infiltrant material into contact with at least a portion of said bonded assembly;

infiltrating said molten infiltrant material into said bonded assembly, and reacting at least a portion of said silicon with at least a portion of said carbon to form a composite body comprising interconnected silicon carbide and a residual infiltrant phase comprising said silicon distributed throughout said interconnected silicon carbide, thereby forming a unitary silicon carbide composite body.

Claim 2 (original): The method of claim 1, further comprising providing a mechanical locking system, said system comprising a key and keyway, said key comprising RBSC material, and said keyway comprising a hollowed-out region in said joined preforms, said keyway being positioned such that said location intersects said keyway, said keyway being of a size and shape as to engage said key; and placing said key into said keyway, thereby causing a mechanical locking action to occur.

Claim 3 (original): The method of claim 1, wherein said preform further comprises at least one filler material.

Claim 4 (original): The method of claim 2, wherein said filler material comprises at least one form selected from the group consisting of particulates, fibers, platelets, flakes, and reticulated structures.

Claim 5 (original): The method of claim 1, wherein said preform comprises by volume about 5 percent to about 95 percent porosity.

Claim 6 (original): The method of claim 1, wherein said preform comprises by volume from about 1 percent to about 10 percent of said carbon.

Claim 7 (original): The method of claim 1, wherein said carbon is formed by introducing an organic-based resin into said permeable mass, and thermally decomposing the resin in a non-oxidizing atmosphere.

Claim 8 (original): The method of claim 7, wherein said organic resin comprises a carbohydrate.

Claim 9 (original): The method of claim 1, wherein said carbon is in the form of a reticulated structure.

Claim 10 (original): The method of claim 2, wherein said carbon is in the form of a coating on at least a portion of said filler material.

Claim 11 (original): The method of claim 2, wherein said filler material comprises a three-dimensionally connected structure.

Claim 12 (original): The method of claim 1, wherein said filler material comprises at least one material selected from the group consisting of carbides, borides and nitrides.

Claim 13 (original): The method of claim 1, wherein said infiltrant material comprises silicon and aluminum.

Claim 14 (original): The method of claim 1, wherein said filler material comprises at least one material selected from the group consisting of silicon carbide, silicon nitride and titanium diboride.

Claim 15 (original): The method of claim 1, wherein said infiltrant material comprises silicon and at least one metal selected from the group consisting of copper and zinc.

Claim 16 (original): The method of claim 1, wherein said infiltrant material is heated to a temperature ranging from about 800 C to about 1800 C.

Claim 17 (original): The method of claim 1, wherein said infiltrating is conducted in a non-oxidizing atmosphere.

Claim 18 (original): The method of claim 1, wherein said infiltrating is conducted under vacuum.

Claim 19 (currently amended): A method for making a unitary silicon carbide composite body, comprising:

bringing at least two subunit preforms into contact with one another at a location relative to one another at which said preforms are to be joined, thereby forming a boundary zone between said subunit preforms, each of said preforms being permeable to molten silicon or silicon alloy, and each containing at least some carbon;

providing a key comprising a mechanical locking preform containing at least some carbon;

providing a keyway ~~in said adjacent preforms, said keyway being of~~ having a size and shape as to engage said mechanical locking preform, and placing said keyway across

said boundary zone ~~said keyway being placed at a location between said subunit preforms~~ such that supplying of said key to said keyway will cause a mechanical locking action to occur;

placing said mechanical locking preform into said keyway, thereby restraining movement of one subunit preform relative to the other in at least one plane, and ~~plane,a nd~~ thereby forming an assemblage of preforms;

providing an infiltrant material comprising silicon;

heating said infiltrant material to a temperature above the liquidus temperature of said infiltrant material to form a molten infiltrant material;

communicating said molten infiltrant material into contact with at least a portion of said preform assemblage;

infiltrating said molten infiltrant material into said preform assemblage, and reacting at least a portion of said silicon with at least a portion of said carbon to form a composite body comprising interconnected silicon carbide and a residual infiltrant phase comprising said silicon distributed throughout said interconnected silicon carbide, thereby forming a unitary silicon carbide composite body.

Claim 20 (original): The method of claim 19, wherein said preform comprises silicon carbide.

Claim 21 (original): The method of claim 19, wherein said preform further comprises at least one filler material.

Claim 22 (original): The method of claim 19, wherein at least a portion of said carbon of said preform is interconnected.

Claim 23 (currently amended): A method for making a unitary silicon carbide composite body, comprising:

bringing at least two subunit preforms into contact with one another, thereby defining ~~at~~ a location relative to one another at which said preforms are to be joined, each

of said preforms being permeable to molten silicon or silicon alloy, and each containing at least some carbon;

providing a key comprising a mechanical locking reaction-bonded silicon carbide body;

providing a keyway in said adjacent preforms, said keyway being of a size and shape as to engage said mechanical locking body, and said keyway being placed at ~~a~~ said location between said subunit preforms such that supplying of said key to said keyway will cause a mechanical locking action to occur;

placing said mechanical locking body into said keyway, thereby restraining movement of one subunit preform relative to the other in at least one plane, and thereby forming an assemblage of preforms;

providing an infiltrant material comprising silicon;

heating said infiltrant material to a temperature above the liquidus temperature of said infiltrant material to form a molten infiltrant material;

communicating said molten infiltrant material into contact with at least a portion of said preform assemblage;

infiltrating said molten infiltrant material into said preform assemblage, and reacting at least a portion of said silicon with at least a portion of said carbon to form a composite body comprising interconnected silicon carbide and a residual infiltrant phase comprising said silicon distributed throughout said interconnected silicon carbide, thereby forming a unitary silicon carbide composite body.

Claim 24 (currently amended): A method for making a unitary silicon carbide composite body, comprising:

bringing at least two subunit reaction-bonded silicon carbide (RBSC) composite bodies into contact with one another at a location relative to one another at which said RBSC composite bodies are to be joined, thereby rendering said subunit RBSC composite bodies adjacent to one another;

providing a key comprising a mechanical locking preform containing at least some carbon;

providing a keyway in said adjacent RBSC composite bodies, said keyway being of a size and shape as to engage said mechanical locking preform, and said keyway being placed at a location between said subunit RBSC composite bodies such that supplying of said key to said keyway will cause a mechanical locking action to occur;

placing said mechanical locking preform into said keyway, thereby restraining movement of one subunit RBSC body relative to the other in at least one plane, and thereby forming an assemblage of RBSC bodies;

providing an infiltrant material comprising silicon;

heating said infiltrant material to a temperature above the liquidus temperature of said infiltrant material to form a molten infiltrant material;

communicating said molten infiltrant material into contact with at least a portion of said mechanical locking preform;

infiltrating said molten infiltrant material into said mechanical locking preform, and reacting at least a portion of said silicon with at least a portion of said carbon to form from said mechanical locking preform a composite body comprising interconnected silicon carbide and a residual infiltrant phase comprising said silicon distributed throughout said interconnected silicon carbide, thereby forming a unitary silicon carbide composite body.

Claim 25 (currently amended): A method for making a unitary silicon carbide composite body, comprising:

bringing at least two subunit reaction-bonded silicon carbide (RBSC) bodies into contact with one another at a location relative to one another at which said RBSC bodies are to be joined, thereby forming a boundary between said subunit bodies;

providing a key comprising a mechanical locking RBSC body;

providing a keyway in said adjacent RBSC bodies, said keyway being of a size and shape as to engage said mechanical locking RBSC body, and said keyway being placed at a location between said subunit RBSC bodies such that said boundary intersects said keyway and such that supplying of said key to said keyway will cause a mechanical locking action to occur;

placing said mechanical locking RBSC body into said keyway, thereby restraining movement of one subunit RBSC body relative to the other in at least one plane, and thereby forming an assemblage of RBSC bodies; and

heating said assemblage to a temperature above the melting point of said residual infiltrant material, thereby rendering said residual infiltrant within said subunit RBSC bodies molten, and thereby causing said molten infiltrant in adjacent bodies to fuse to one another across said boundary between said subunit RBSC bodies.

Claim 26 (original): The method of claim 25, further comprising providing a source of infiltrant material to supplement said residual infiltrant material.

Claim 27 (original): The method of claim 23, wherein said infiltrating is conducted in a temperature range of about 800C to about 1800C.

Claim 28 (original): The method of claim 23, wherein said infiltrant material comprises silicon and aluminum.

Claim 29 (original): The method of claim 23, wherein said infiltrant comprises by weight from about 10 percent to substantially 100 percent of said silicon.

Claims 30-32 (canceled).

Claim 33 (original): The method of claim 16, wherein said infiltrant material is heated to a temperature in the range of about 1100C to about 1500C.

Claim 34 (currently amended): A method for making a unitary composite body, comprising:

bringing at least two subunit preforms into contact with one another at a location relative to one another at which said preforms are to be joined, each of said preforms being permeable to a molten infiltrant, and comprising at least one filler material;

providing a key comprising a mechanical locking preform;

providing a keyway in said adjacent preforms, said keyway being of a size and shape as to engage said mechanical locking preform, and said keyway being placed at a location between said subunit preforms such that supplying of said key to said keyway will cause a mechanical locking action to occur;

placing said mechanical locking preform into said keyway, thereby restraining movement of one subunit preform relative to the other in at least one plane, and thereby forming an assemblage of preforms;

providing an infiltrant material;

heating said infiltrant material to a temperature above the liquidus temperature of said infiltrant material to form a molten infiltrant material;

communicating said molten infiltrant material into contact with at least a portion of said preform assemblage; and

causing said molten infiltrant material to infiltrate into said preform assemblage, to form an assemblage of composite bodies each comprising said at <u>least</u> [[lest]] one filler material dispersed through a matrix phase comprising said infiltrant material, thereby forming a unitary composite body.